

Claim 1 is directed to a distributed bus differential relay that comprises in pertinent part: a plurality of current transformers, each measuring current in an associated feeder line; a set of leads connecting the plurality of current transformers in parallel; and a plurality of differential relay elements connected across the set of leads and associated with one of the circuit breakers for tripping the associated circuit breaker in response to predetermined voltage conditions across the set of leads.

It is stated in the rejection that:

“As to a set of leads connecting the plurality of current transformers in parallel, they are inherent in the Elmore structure, since it discloses the plurality of parallel-connected current transformers (elements 22 and 48, 24 and 50, 26 and 52 in Fig. 1 accordingly).”

On the contrary, Elmore discloses a differential protective relay in which the current transformers are not connected at all. To simplify the analysis, consider only the current transformers 22, 36 and 48 which measure current in Phase A conductors of the system protected in Elmore. These current transformers are individually connected to a sequence filter 30, 42 and 54 in an associated differential relay 34 and 46. There is no connection whatever of these current transformers, let alone a parallel connection.

In contrast, Figure 1 clearly illustrates that the current transformers  $23_1$  to  $23_N$  are all connected in parallel by the pair of leads 25. As shown in Figure 1, these current transformers have two ends and the conductors 25 connect the common ends of all of the current transformers together. Elmore uses one line symbology to show the connection of each of the current transformers 22, 36 and 48. Thus, instead of showing a lead connected to each end of the winding of these transformers, a single line drawn to the center of the coil is depicted. In reality, there would be a lead connected to each end of each of these winding of these current transformers 22, 36 and 48. However, those two leads would follow the single line designation and be connected separately to individual sequence filters. There is no parallel connection of these leads in Elmore.

As previous discussed, the differential protective relay of Elmore uses a communication channel 64 to interchange current information between protective relays 20, 34 and 46. This scheme requires one of the relays to be specialized in order to sum the currents from the individual protective relays for distribution to each of the other relays. Clearly, the current transformers in Elmore are not connected in parallel as required in Claim 1. Thus, it also does not show “a plurality of differential relay elements connected across

said set of leads (connecting the current transformers in parallel).” In summary, Elmore is directed to a different structure which operates in a different way to achieve a somewhat related result, and therefore, does not anticipate Claim 1.

Claims 2, 3 and 8 all depend from Claim 1 and therefore patentable over Elmore for the same reasons. Furthermore, Claim 3 calls for the bus and feeder lines to be multiphase and a current transformer is associated with each phase for each feeder line. The sets of leads comprise phase leads connecting the current transformers associated with each phase and parallel. Clearly, Elmore does not show the current transformers of each connected in parallel, and therefore, Claim 3 clearly further distinguishes over Elmore.

#### Claims 4-7

Claims 4-7 are rejected under 35 U.S.C. §103(a) as being unpatentable over Elmore in view of Gonzalez et al. (US 5,670,923) and Wolfe (US 4,876,625). It is further stated that “Elmore discloses all the elements of Claim 1. However, regarding Claim 4, it does not disclose the low energy trip device and the differential relays being powered by differential transformers. Wolfe discloses the relays...powdered [sic] by differential transformers...[and] Gonzalez et al. disclose such lower energy tripping device [sic].”

As discussed above, Elmore does not disclose current transformers connected in parallel by a set of leads, and therefore, necessarily does not “disclose differential relay elements connected across that set of leads. Neither Wolfe nor Gonzalez et al. are directed to differential relays. Wolfe is directed to a circuit breaker system in which the currents are in a multiphase system are auctioneered to respond to the highest phase current. Gonzalez is just directed to a circuit breaker, not a differential relay, having a low energy tripping device. Neither of these secondary references make up for the deficiencies in Elmore of not disclosing current transformers connected by a set of leads in parallel with the differential relay elements connected to those leads. Furthermore, there is no motivation to combine the teaching of these three references because neither Wolfe nor Gonzalez et al. are directed to differential relays. Accordingly, Claim 4 further patentably distinguishes over the cited references.

Claims 5-7 all depend on Claim 4 and are therefore patentable over the references for the same reasons.

#### Claims 9, 11 and 13

Claims 9, 11, and 13 are rejected under 35 U.S.C. §103(a) as being unpatentable over Elmore in view of Scott (US 4,788,620). Scott was cited as disclosing a voltage-limiting device connected across the outputs of current transformers for limiting

voltage. Again, Elmore does not show the basic elements of the combination of Claim 9 which includes the elements of Claim 1. Scott, which also is not directed to a differential relay does not make up for the deficiencies in Elmore in not showing leads connecting the current transformers of a differential relay system in parallel and with the differential relay elements connected to these leads. While not cited in the rejection, the previously cited Granville patent (US 5,181,026) is discussed in connection with Claim 9. However, Granville is directed to a powerline monitor and has no relevance to a differential protective relay. More importantly, it adds nothing to the deficiencies of Elmore to render Claim 9 obvious. Claims 11 and 13 both depend from Claim 9 and are therefore patentable over the references for the same reason.

Claims 10, 12, 14 and 15

Claims 10, 12, 14 and 15 are rejected under 35 U.S.C. §103(a) as being unpatentable over Elmore in view of Granville and Webb (US 5, 982,597). Webb is directed to a specific type of varistor that incorporates a fusible shorting device. Clearly, this reference does not make up for the deficiencies in the teachings of Elmore and Granville with regard to the combination of Claims 10, 12, 14 or 15, and therefore, these Claims, which all depend from Claim 1, are patentable over the references for the same reasons.

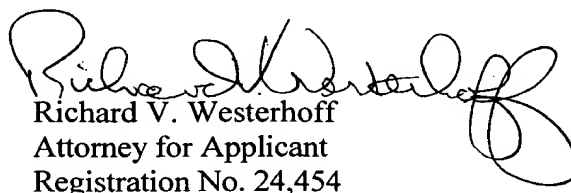
Claim 16

Claim 16 was rejected under 35 U.S.C. §103(a) as being unpatentable over Elmore in view of Granville, Webb and Alley et al. (US 4,701,680). Claim 16 depends from Claim 1 and is therefore patentable for the same reasons. Alley et al. is directed to a fluorescent lamp dimmer that includes a resistor in series with a varistor and a circuit that provides overvoltage control to the dimmer circuit. This teaching adds nothing to the teachings of the other references that would render Claim 16 obvious. Therefore, Claim 16 patentably distinguishes over the references.

Conclusion

In view of all the above, reconsideration and allowance of the application as now presented is respectfully solicited.

Respectfully submitted,

  
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